



APPLICATION

1. A process for making a semiconductor device comprising the steps of:

performing a LOCOS operation on an epitaxial layer of a semiconductor substrate to define an active region having a predefined boundary;

implanting a first dopant into the epitaxial layer within the active region to create a well of a first type of conductivity;

implanting the first dopant into the well to create a first region and a second region separated from the first region, the first and second regions being implanted across the boundary of the active region and directly spaced apart from each other across the active region and spaced apart from the center of the active region;

depositing a polysilicon layer over the active region;

doping the polysilicon layer to create a semiconductor layer of a second type of conductivity;

patterning the semiconductor layer to create a gate over the first and second regions and well;

performing an ion implant of the second type conductivity between the LOCOS regions and the gate to create first and second lightly doped regions, the first and second lightly doped regions being separated by a channel region beneath the gate;

depositing an oxide layer over the gate and active region;

etching the oxide layer to create side spacers on each side of the gate; and

PATENT

1. A process for making a semiconductor device comprising the steps of:

performing a LOCOS operation on an epitaxial layer of a semiconductor substrate to define an active region having a predefined boundary;

implanting a first dopant into the epitaxial layer within the active region to create a well of a first type of conductivity;

depositing a polysilicon layer over the active region;

doping the polysilicon layer to create a poly semiconductor layer of a second type of conductivity;

patterning the poly semiconductor layer to create a poly gate over the well and across the active area, the poly gate having first and second ends and a center;

performing an ion implant of the second type conductivity between the LOCOS regions and the poly gate to create first and second lightly doped regions, the first and second lightly doped regions being separated by a channel region beneath the poly gate and having a predefined width and length with the width being less than the length and the first lightly doped region being in alignment with the center of the poly gate;

depositing an oxide layer over the poly gate and active region;

etching the oxide layer to create side spacers on each side of the poly gate; and

implanting a heavy dose of the second type of dopant between the LOCOS regions and the side spacers to create source and drain regions, the source and drain regions being separated by the first and second lightly doped regions and the channel region.

implanting a heavy dose of the second type of dopant between the LOCOS regions and the side spacers to create source and drain regions, the source and drain regions being separated by the channel region.

13. A process for making a semiconductor device comprising the steps of:

- performing a LOCOS operation on an epitaxial layer to define an active region;

- using a first reticle to create a pattern for implanting a first dopant into the epitaxial layer within the active region to create a well of a first type of conductivity;

- using a second reticle to create a pattern for implanting with the first type of dopant into the well to create first and second regions across the boundary of the active region and spaced apart directly across the active region from each other and spaced apart from the center of the active region;

- depositing a polysilicon layer over the active region;

- heavily doping with a second dopant the polysilicon layer to create a semiconductor layer of a second type of conductivity;

- patterning the semiconductor layer to create a gate;

- using a third reticle to create a pattern for lightly doping with a second dopant the active region between the LOCOS regions and the gate;

- depositing an oxide layer over the gate and active region;

- etching the oxide layer to create side spacers on each side of the gate; and

- using the third reticle to create a pattern for heavily doping with the second dopant the active region between the LOCOS regions and the side spacers.

7. A process for making a semiconductor device comprising the steps of:

- performing a LOCOS operation on an epitaxial layer to define an active region;

- using a first reticle to create a pattern for implanting a first dopant into the epitaxial layer within the active region to create a well of a first type of conductivity;

- depositing a polysilicon layer over the active region;

- heavily doping with a second dopant the polysilicon layer to create a poly semiconductor layer of a second type of conductivity;

- patterning the poly semiconductor layer to create a poly gate having a first and second end and a center;

- using a second reticle to create a pattern for lightly doping with a second dopant the active region between the LOCOS regions and the poly gate in contact with the boundaries of the active region, and positioned to be in alignment with the center of the poly gate and disjoined from the first and second ends of the poly gate;

- depositing an oxide layer over the poly gate and active region;

- etching the oxide layer to create side spacers on each side of the gate; and

- using the first reticle to create a pattern for heavily doping with the second dopant the active region between the LOCOS regions and the side spacers.